

### Abstract of the Disclosure

An optical signal performance monitoring apparatus in a multi-channel optical transmission system and a method for monitoring the optical signal performance are provided. To achieve the above objective, the optical signal performance monitoring apparatus in the multi-channel optical transmission system includes; an optical input unit for controlling the spot size of an inputted multi-channel optical signal and generating the 1<sup>st</sup> multi-channel beam; an optical collimation and focusing unit for collimating the 1<sup>st</sup> multi-channel beam and focusing the 2<sup>nd</sup> multi-channel beam which is divided by wavelength; a diffraction and reflection unit for diffracting and reflecting the 1<sup>st</sup> collimated multi-channel beam, and generating the 2<sup>nd</sup> multi-channel beam which is divided by wavelength and is in parallel with the 1<sup>st</sup> collimated multi-channel beam; an optical detection unit for measuring the intensity of the 2<sup>nd</sup> multi-channel beam by wavelength, which is focused by wavelength by the optical collimation and focusing unit. The optical signal performance monitoring apparatus can measure the intensity, the wavelength and the optical signal-to-noise ratio of the multi-channel optical signal by channel simultaneously in real time. In addition, since the optical signal performance monitoring can minimize the impact caused by an aberration and maintain the same f-number in the optical system, a high resolving power and a high dynamic range are guaranteed.

[Representative Drawing]

FIG. 1